

Promoting Participation of Agricultural Households in the Milk Market: Evidence from Northern Côte d'Ivoire

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Increased participation in agricultural markets may alleviate poverty among rural households in Africa. Thus, understanding the determinants of market participation is important for the design and evaluation of development policies. The study described in this brief makes an institutional analysis of dairy markets and evaluates determinants of dairy market participation by agricultural households in Côte d'Ivoire. Results can be used to draw policy recommendations that take into account a larger population of agricultural households. For example, the implications of higher market prices or lower transactions costs can be evaluated for not only the volume of marketed surplus from existing cattle owners, but also for the propensity of rural households more broadly to adopt livestock. The analysis of rural dairy markets in Côte d'Ivoire also represents a rare look at market participation in West Africa. Market participation has been the focus of several economic studies in East Africa, but very few analyses address the issue of participation in dairy markets in West Africa. Thus, this study provides an empirical analysis of the performance of the rural dairy market in Côte d'Ivoire and derives some implications for public policy in the design and evaluation of dairy market development.

Background

Participation in agricultural markets by rural households is an important strategy for poverty alleviation and food security in developing countries (Heltberg and Tarp 2001). Peasant farmer communities are among the poorest and the largest in developing countries; therefore, policies that stimulate their interaction in the exchange economy will enhance economic growth. Agricultural households, however, often face imperfect or incomplete markets for some goods and factors, which are then non-tradable, and production and consumption decisions are no longer separable (Sadoulet and de Janvry 1995).

Sadoulet and de Janvry (1995) summarize the sources of incomplete or imperfect markets facing agrarian households. These imperfect markets include: costs resulting from distance from markets, poor infrastructure, high marketing margins (meaning a high differential between buying and selling price), imperfect information in the form of uncertainty regarding prices for producers, or imperfect knowledge about the existence of local markets for sale, and the cost of searching and screening for a partner with whom to exchange.

As a result, the reduction of transactions costs, as a means of increasing market participation, has been identified as a goal of development policy (Delgado 1995). In the case of dairy markets, perishability and bulkiness of raw milk add additional transactions costs (Holloway et al. 2000). The perishability of milk increases the likelihood of product spoilage and losses during milk processing or

transport. The associated costs reduce the profitability of marketing milk. Several empirical applications can be found in the literature. See, for example, Holloway et al. (2000), Holloway and Ehui (2003), and Bellemare and Barrett (2006).

Methods

This research proposes a methodological approach that simultaneously evaluates livestock ownership and market participation decisions. The approach is applied to data from a new survey of 185 sedentary agricultural households, collected in November 2006 in the Savanes province in northern Côte d'Ivoire where 85 percent of the country's livestock exists. Essentially all producers are smallholders with potential for milk production and marketing. Cropping activities such as cotton, cashew nuts, mangoes, and maize dominate the agricultural production in this province (Barry 2001). Livestock are mainly kept as a form of wealth.

The sampling method used for data collection was designed in two steps. First, the district of Khorogo was selected as the milk shed because of the relatively large share (42 percent) of milk production in the province (Atsé 1990). In the second stage, 50 villages were selected along six main transportation routes linking producers in rural areas and consumers in the district capital. Criteria of selection were distance to district town market and milk production. In each village, an average of three

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Livestock herd in a pen with the livestock keeper, Côte d'Ivoire. Photo by Jeanne Coulibaly.

or four households were selected randomly from the population of livestock owners and non-livestock owners. Team members thus interviewed 99 sedentary agricultural households with livestock and 86 agricultural households without livestock.

A Heckman econometric model that evaluates livestock ownership and market participation decisions simultaneously was used to analyze the data. The variables included in the model were capital stock (cross bred and indigenous bred), intellectual capital (number of years of formal schooling and extension), transaction costs (distance to market), household characteristics (ethnicity, wealth, age), and milk market price.

Major Findings

The institutional analysis reveals that domestic production of milk in Côte d'Ivoire occurs mainly under a traditional husbandry system where feed constraints and animal disease pressures limit milk production. Traditional dairy production is a labor intensive activity relying on the use of hired Peulh labor.

Milk represents a by-product given to the hired labor as part of his salary. It is mostly sold in a raw condition under an informal marketing system that does not compete with the formal marketing system where

imported dairy products, mainly milk powder and condensed milk, are sold.

One important feature of livestock management and the rural dairy market is the separation in resource allocation between the household head and the hired labor. Indeed, because of lack of breeding skills and some other social preferences, household family members do not allocate their time and labor to cow management and milk marketing. This labor division is one of the key features of the sedentary livestock breeding in Côte d'Ivoire and differs from the traditional herder household in East Africa where the decision making unit and labor input is mainly limited to family members. Thus, in the sedentary

livestock breeding system in Côte d'Ivoire, income from milk sales is not pooled with other sources of income. Returns from milk sales are kept by livestock keepers as partial remuneration for their labor. Application of the Heckman selectivity model is used to assess factors affecting cattle adoption and milk sales.

Results reveal that typical characteristics of cattle adopters are old households having a certain number of assets reflecting their financial status and membership in a Peulh tribe. These households are generally located far from the district



Indigenous Taurus and Zebu cattle on a pasture in northern Côte d'Ivoire. Photo by Jeanne Coulibaly.



Interview with a household head (second from right) conducted by Jeanne Coulibaly (far left) and two enumerators. Photo by Jeanne Coulibaly.

town. Higher milk price policies represent an incentive for households to own cattle. Once households own cows, almost all of them participate in dairy market since the sale of milk is a source of income for the livestock keeper.

Volume of milk sold depends mainly on cow productivity, number of extension visits and, to a lesser extent, on geographical location and the livestock keeper's wage. Some characteristics of the household head (age and proxy for income) influence the milk sales revealing that livestock owners still have some control on the amount of participation in milk sales.

Practical Implications

The findings on the effect of milk prices on livestock ownership have potentially important implications for the design of agricultural policies. Agricultural policies that can affect milk price may increase livestock ownership, and thus milk sales, among rural households. Therefore, increased milk sales in the aggregate may be achieved through policies that increase livestock ownership.

Motivating farmers who do not own cattle to invest in livestock appears to be an important element of any strategy to increase milk sales. In the Savanes region of Côte d'Ivoire, the typical characteristics of cattle adopters are households with a certain number of assets reflecting their financial status, suggesting that livestock ownership, and thus milk sales, will increase with the overall economic growth of rural areas through investment in rural development projects.

Despite the potential economic implications for the extant literature on dairy market participation and the rare look at dairy market participation in West Africa provided by this research, limitations still exist. Extension of inference of the results to all livestock production systems and geographical areas in Côte d'Ivoire, as well as in all West African countries, should be done cautiously. These results may be only applied to geographical areas in Côte d'Ivoire or West African countries with similar cultures and economic behavior to the sample of study.

Indeed, this research has been conducted in the northern part of Côte d'Ivoire, where rural sedentary agricultural households have some specific cultures and economic behavior regarding dairy market participation that may differ from transhumant cattle herders or southern agricultural households. For example, livestock husbandry and milk marketing represents a primary activity and a main source of income for transhumant cattle herders as opposed to sedentary households for which cropping is the main source of income.

It is likely that the factors affecting dairy market participation for such transhumant households will be different from the sedentary agricultural households. The economic and social role played by livestock among northern agricultural households may not be similar to that of southern rural households who have a weaker tradition in livestock rearing. Therefore, a larger study taking into account these diversities among types of livestock rearing and income generation needs to be conducted in order to make any inferences.

Further Reading

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